

5. The high frequency circuit module according to
claim 1, wherein said multilayer dielectric substrate
includes three or more dielectric substrate layers, a
5 microstrip transmission line of a millimeter wave
circuit part is formed by a pattern of a surface
metallic layer of a first layer and a metallic layer
provided between the first and second layers, and a
metallic layer formed in another intermediate layer in
said dielectric substrate has a transmission line to
10 which an intermediate frequency signal generated by
said millimeter wave circuit part is connected.

6. The high frequency circuit module according to
claim 5, comprising a both-sided two-layered dielectric
substrate in which a final layer on the side opposite
to the first layer of said multilayer dielectric
substrate is larger than the other plurality of
20 dielectric substrates of said multilayer dielectric
substrate,

wherein a metallic layer of an antenna pattern is
formed on one of the faces of the final layer, and
a support plate is formed in the portion where
said other dielectric substrates are not stacked on the
25 other face of said final layer.

7. The high frequency circuit module according to
claim 1, wherein said multilayer dielectric substrate

is provided with a grounding metallic layer as a layer lower than a grounding metallic layer used as a counter electrode of the microstrip line made by the surface metallic layer as a millimeter wave transmission line, and a metallic layer for transmitting an intermediate frequency signal and a metallic layer for a millimeter wave circuit power providing line to avoid crosstalk of a millimeter wave signal in the surface layer are provided between said grounding metallic layers.

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8. The high frequency circuit module according to claim 5, wherein said multilayer dielectric substrate is constructed so that the lines for intermediate frequency signal and the high frequency signal are disposed between said grounding metallic layers and do not cross a sealing portion of said multilayer dielectric substrate with said hermetic cap.

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9. The high frequency circuit module according to claim 8, wherein said plurality of other dielectric substrates are a multilayer substrate made of glass ceramic or alumina ceramic, and said both-sided two-layer dielectric substrate is a both-sided two-layer substrate made of teflon whose permittivity is lower than permittivity of said plurality of other dielectric substrates, and said support plate is any of a metal plate, a metal plate in which holes are opened to increase a heat dissipating efficiency, a hard organic

substrate, a hard organic substrate in which holes are opened, and a hard organic substrate in which holes are opened and which is metal plated to increase thermal conductivity.

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1.2 An automotive radar module,

10. An automotive antenna system wherein an antenna metallic pattern is formed on one of faces of a multilayer dielectric substrate, RF circuit parts including an oscillation circuit, a power amplifier for amplifying a part of an output of said oscillation circuit and supplying the amplified output to said antenna, and a mixer for mixing a signal of the from said antenna metallic pattern with a signal of the oscillation circuit are formed on the other face of said multilayer dielectric substrate, and a transmission line for connecting said antenna metallic pattern and said RF circuit parts is constructed by a group of vias including a periodical structure or vias having a coaxial structure provided in the direction perpendicular to faces of said multilayer dielectric substrate.

11. The automotive radar module according to claim 10,
wherein the group of vias including said periodical
structure is constructed so that the vias are
distributed around a center conductor at an interval
which is equal to or smaller than 1/4 of a wavelength
of a signal of said transmission line.

12. The automotive radar module according to claim 10,
wherein said via having the coaxial structure is formed
by a center conductor and a cylindrical conductor
surrounding said center conductor and connected between
5 grounding conductive layers provided in said multilayer
dielectric substrate.

1006747 202002